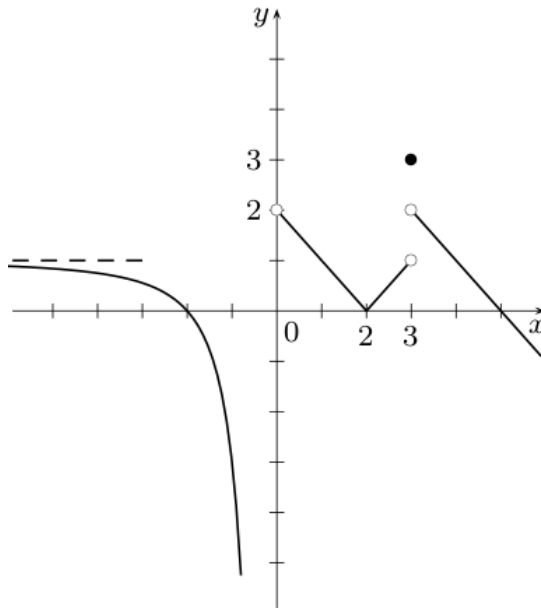


201-103-RE - Calculus 1

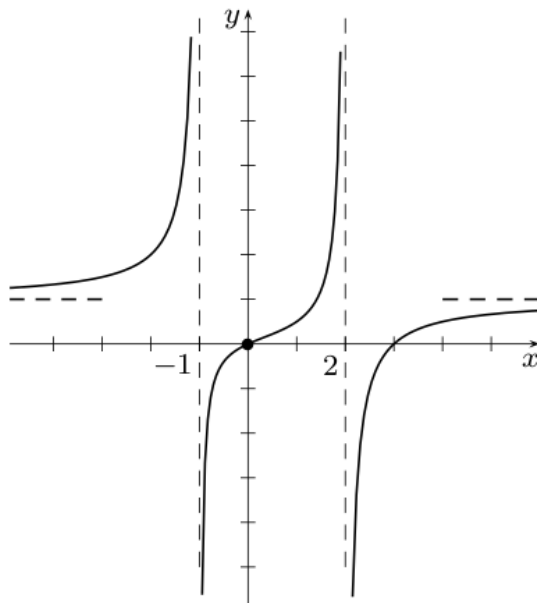
WORKSHEET: LIMITS

1. Use the graph of the function $f(x)$ to answer each question.
Use ∞ , $-\infty$ or DNE where appropriate.



- (a) $f(0) =$
- (b) $f(2) =$
- (c) $f(3) =$
- (d) $\lim_{x \rightarrow 0^-} f(x) =$
- (e) $\lim_{x \rightarrow 0} f(x) =$
- (f) $\lim_{x \rightarrow 3^+} f(x) =$
- (g) $\lim_{x \rightarrow 3} f(x) =$
- (h) $\lim_{x \rightarrow -\infty} f(x) =$

2. Use the graph of the function $f(x)$ to answer each question.
Use ∞ , $-\infty$ or DNE where appropriate.



- (a) $f(0) =$
- (b) $f(2) =$
- (c) $f(3) =$
- (d) $\lim_{x \rightarrow -1} f(x) =$
- (e) $\lim_{x \rightarrow 0} f(x) =$
- (f) $\lim_{x \rightarrow 2^+} f(x) =$
- (g) $\lim_{x \rightarrow \infty} f(x) =$

4. Find the following limits involving absolute values.

(a) $\lim_{x \rightarrow 1} \frac{x^2 - 1}{|x - 1|}$

(b) $\lim_{x \rightarrow -2} \frac{1}{|x + 2|} + x^2$

(c) $\lim_{x \rightarrow 3^-} \frac{x^2|x - 3|}{x - 3}$

5. Find the value of the parameter k to make the following limit exist and be finite. What is then the value of the limit?

$$\lim_{x \rightarrow 5} \frac{x^2 + kx - 20}{x - 5}$$

6. Answer the following questions for the piecewise defined function $f(x)$ described on the right hand side.

(a) $f(1) =$

(b) $\lim_{x \rightarrow 0} f(x) =$

(c) $\lim_{x \rightarrow 1} f(x) =$

$$f(x) = \begin{cases} \sin(\pi x) & \text{for } x < 1, \\ 2^{x^2} & \text{for } x > 1. \end{cases}$$

7. Answer the following questions for the piecewise defined function $f(t)$ described on the right hand side.

(a) $f(-3/2) =$

(b) $f(2) =$

(c) $f(3/2) =$

(d) $\lim_{t \rightarrow -2} f(t) =$

(e) $\lim_{t \rightarrow -1^+} f(t) =$

(f) $\lim_{t \rightarrow 2} f(t) =$

(g) $\lim_{t \rightarrow 0} f(t) =$

$$f(t) = \begin{cases} t^2 & \text{for } t < -2 \\ \frac{t + 6}{t^2 - t} & \text{for } -1 < t < 2 \\ 3t - 2 & \text{for } t \geq 2 \end{cases}$$